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# CURRENT LITERATURE IN AGRICULTURAL ENGINEERING

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U. S. Department of Agriculture

## Agricultural Engineering.

How agricultural engineers can best cooperate with R.E.A. program. By Oscar Meier. Agricultural Engineering. v. 18, no. 5. May, 1937. p.199-200.

## Agriculture.

Application of farm management data in farm planning. Mr. Melville H. Cohee. Soil Conservation. v.2, no. 11. May, 1937. p. 262-264.

Farm management information needed in farm planning. E.H. Reed. Soil Conservation. v.2, no. 11. May, 1937. p. 260-261, 266.

Fifty-fifth annual report, 1935-1936. Wooster, Ohio. 1937. 140 p. Ohio. Agricultural experiment station. Bulletin no.579. Agricultural engineering, p. 108-117.

Types of farming in Utah. By Marion Clawson and others. Logan, Utah, 1936. 97 p. Utah. Agricultural experiment station. Bulletin no.275.

## Air Conditioning.

Cooling power of furnace fan. By G.B. Helmrigh. Heating & Ventilating. v. 34, no. 3. March, 1937. p.52-54. Cooling effect produced in a residence by recirculating air with furnace fan.

Engineering problems in air conditioning. By Samuel R. Lewis. Agricultural Engineering. v. 18, no. 5. May, 1937. p. 204, 206.

Study of summer cooling in the Research residence using water at temperatures of 52F and 46F (Part 1) By A.P. Kratz, S. Konzo and E.L. Broderick. Heating, Piping & Air Conditioning. v. 9, no. 5. May, 1937. p. 319-327.

Well water cooling with warm-air systems. By C.D. Leiter. Heating & Ventilating. v. 34, no. 3. March, 1937. p. 60-61. Points out advantages of adding well water cooling to forced air plants, thus converting them to year-round systems. This addition of summer cooling adds greatly to value of plant while being simple to install.

Air Conditioning. (Cont'd)

What's the cost of air conditioning? By Rex E. Hieronymus. Heating, Piping & Air Conditioning. v. 9, no. 5. May, 1937. p. 295-298. Analyses owning and operating costs of air conditioning system for a two-story building of miscellaneous tenancy, including a bank, offices, shops a restaurant, etc., compares figures with cost of straight heating system. Method of heating and cooling employed, which is of rather unusual design, is briefly described and diagrammed.

Alcohol Fuel.

Carbon monoxide in engine exhaust using alcohol blends. By L.C. Lighty and C.W. Phelps. Industrial & Engineering Chemistry. v. 29, no. 5. May, 1937. p. 495-502. Tests on engines with gasoline and 10 and 20 per cent ethyl-alcohol blends show that the amount of carbon monoxide in exhaust gases depends upon air-fuel ratio, and is practically the same for all three fuels at air-fuel ratios comparable with regard to theoretical air requirement for the particular fuel. With all fuels, air-fuel ratios necessary for desirable engine performance result in carbon monoxide in engine exhaust and in blow-by gases which leak past engine piston. Variations in carbon monoxide from individual exhaust ports indicate, for fuels studied, that factors other than fuel characteristics are more important in influencing distribution of air or fuel or both in engine used. Carbon monoxide can be eliminated either with gasoline or alcohol-gasoline blends by providing more air than is required for complete combustion, but this condition results in lowered performance that is not considered desirable.

Motor fuel and by-products. By S.S. Bailey. New Agriculture. v. 19, no. 9. June. 1937. p. 17.

Progress with power alcohol. Pacific Rural Press. v. 133, no. 15. April 10, 1937. p. 512.

Sources on farms of power alcohol studied by United States. National Petroleum News. v. 28, no. 53. December 30, 1936. p. 12. In anticipation of introduction in Congress of legislation to promote use of alcohol blends for motor fuel, Department of Agriculture has launched a study covering possibility of producing alcohol economically from farm products and by-products.

Associations.

Proceedings of the twelfth annual meeting of the National joint committee on fertilizer application held at Washington, D.C., November 17, 1936. Washington, D.C., National fertilizer association, 1937. 128 p. Mimeographed.

Program Annual Meeting of American Society of Agricultural Engineers, University of Illinois, Urbana, Illinois - June 21 to 24, 1937. Agricultural Engineering. v. 18, no. 5. May, 1937. p.220-221.

Associations. (Cont'd)

Selected trade associations of the United States: 1937 edition.  
National and interstate. Washington, D.C., U.S. Bureau of  
Foreign and domestic commerce, 1937. 134 p.

Barns.

Barns are on 1937 building program. American Lumberman. v. 63,  
no. 3092. January 30, 1937. p. 30-31.

Bent, glued rafters make strong barns. By G.N. Brekke. American  
Builder and Building Age. v. 59, no. 5. May, 1937. p. 74-75.

Building Construction.

Appraisal methods and policies. Federal Home Loan Bank Review. v. 3,  
no. 8. May, 1937. p. 260-263. Four general methods of esti-  
mating cost of reproducing a house are available to appraiser:  
1. Detailed cost estimates. 2. Inplace unit method. 3. Cost per  
square foot method. 4. Cost per cubic foot method.

Construction industry, including a list of selected trade associations.  
Washington, D.C., U.S. Bureau of Foreign and domestic commerce,  
1936. 123 p.

Costs and construction practices. By M.O. Swanson. Electrical  
World. v. 107, no. 17. April 24, 1937. p. 60-66. Summary  
of construction practices on REA-financed lines, both completed and  
under construction, together with unit costs for typical projects.

Improved building foundations. By L.W. Neubauer. St. Paul, Minn.,  
1937. 1 p. Minnesota. College of agriculture. Extension division.  
Agricultural engineering news, letter no. 62.

Building Materials.

Wood veneer wallboard is aid to builders. Popular Mechanics. v. 67,  
no. 3. March, 1937. p. 375. Material, supplied in walnut,  
mahogany and avodire, comes in pieces six or nine inches wide and  
eight to ten feet long. It is easily applied over old walls or in  
new construction without special treatment. Because of patented  
joint, no nails are visible after installation. Veneer may be  
painted, first being coated with clear shellac and then with flat  
varnish. Wood finish is only one-quarter inch thick, therefore it is  
particularly suited to modernization work.

Conservation.

Headwaters-control and use; a summary of fundamental principles and  
their application in the conservation and utilization of waters and  
soils throughout headwater areas. Papers presented at the Upstream  
engineering conference..... Washington, D.C., September 22 and 23,  
1936. Washington, D.C., U.S. Government Printing Office, 1937. 261 p.  
multigraphed.

Conservation. (Cont'd)

New conservation districts. Engineering News-Record. v. 118, no. 23.  
June 10, 1937. p. 855. President advocates seven new authorities  
for development and control of natural resource of entire country.

River regulation in our national conservation program. By John C.  
Page. Reclamation Era. v. 27, no. 6. June, 1937. p. 121-122.

Cotton and Cotton Ginning.

Cotton research laboratory proposed. American Fertilizer. v. 86,  
no. 9. May 1, 1937. p. 26. At conference held in Macon on  
April 9th and 10th, Georgia Chemurgic Council was organized. Urges  
Department of Agriculture to take immediate steps to establish  
research laboratory to develop new uses for cotton fiber, and for  
purpose of finding new and greater uses for cotton, so that there  
might be in addition, proportional increases in production of vegetable  
oils and food, and feed products. Somewhat similar recommendations  
were made at Mississippi Chemurgic Council.

Influence of cotton production in northwest Louisiana. By F.W.  
Spencer and M.C. Wilson. Washington, D.C., 1937. 43 p.  
mimeographed. U.S. Department of Agriculture. Extension service.  
Circular no. 257. Study of 369 farms in Caddo, Claiborne, DeSoto,  
Jackson, Lincoln, and Union parishes, Louisiana, 1935.

Potential mechanical improvements involved in modernizing cotton gins.  
By Chas. A. Bennett. Washington, D.C., U.S. Department of agri-  
culture. Bureau of agricultural engineering, 1937. 6 p. mimeographed.

Cotton Machinery.

Cotton picker twice as fast on job as human worker. Popular Mechanics.  
v. 67, no. 3. March, 1937. p. 377. Twice as fast as a human  
worker, latest cotton picker cleans bolls well. It is said to be  
simpler to operate and less expensive than previous machines designed  
for same purpose.

Harvester Company engineers work many years on cotton picker. By E. A. Hunger.  
Harvester World. v. 28, no. 3-4. March-April, 1937. p. 22-23.

There's many an unsolved problem in the machine harvesting of cotton.  
By Harris P. Smith. Farm Implement News. v. 58, no. 10.  
May 20, 1937. p. 24-26, 40. It can be predicted that should there  
be a mechanical picker available that would harvest cotton efficiently  
under favorable conditions its adaptability would be limited, and  
percentage of cotton crop harvested mechanically would be comparatively  
low.

### Dairy Farm Equipment.

Present principle of the milking machine suggested improvements.  
By H.J. Hopfen. Monthly Bulletin of Agricultural Science &  
Practice. v. 28, no. 5. May, 1937. p. 185T-188T.

### Dams.

Hydraulic models used in design of Parker dam. By S. Perliter.  
Civil Engineering. v. 7, no. 6. June, 1937. p. 409-410.

Marshall Ford dam designed for raising in future. Engineering News-  
Record. v. 118, no. 19. May 13, 1937. p. 712.

Selection of materials for rolled-fill earth dams: Discussion. By  
L.F. Harza. Proceedings of American Society of Civil Engineers.  
v. 63, no. 5. May, 1937. p. 969-970.

Stresses around circular holes in dams and buttresses: Discussion.  
By C.P. Vetter. Proceedings of American Society of Civil Engi-  
neers. v. 63, no. 5. May, 1937. p. 1013-1015.

Thirty-five years of dam construction. By W.I. Swanton. Reclama-  
tion Era. v. 27, no. 6. June, 1937. p. 124-126.

### Droughts.

Cause and cure of "dust-bowl" problems. Market Growers Journal.  
v. 60, no. 10. May 15, 1937. p. 270-271.

Now drought feared in dust bowl. Engineering News-Record. v. 118,  
no. 22. June 3, 1937. p. 839. Rainfalls far below normal  
in Great Plains States create conditions as bad as last year.

### Electric Service, Rural

Selling rural service for mutual profit. By H.E. Dexter. Elec-  
trical World. v. 107, no. 19. May 8, 1937. p. 51-53, 114.

Satisfactory electric service for the three groups of rural  
customers. Two plans used to market appliances. Cooperation  
with the dealers an important element.

Watch for vibration on rural conductors. By H.H. Brown. Electrical  
World. v. 107, no. 19. May 8, 1937. p. 54-55. Increas-  
ing use of long spans accentuates conductor vibration. Extreme  
care must be taken to assure that sags and tensions are correct.

### Electric Wiring.

Domestic wiring. By James Paul Warner. The Bulletin. Hydro-  
Electric Power Commission of Ontario. v. 24, no. 4. April,  
1937. p. 107-112.

## Electricity-Distribution.

Building load on rural lines. By H. J. Gallagher. Electrical World. v. 107, no. 17. April 24, 1937. p. 48-50. Ten-year record exposes the necessity for increased customer equipment. Problem of building sturdy low-cost lines has been solved to extent of rendering service to 653,000 farms between 1926 and 1936. During this time cost of kilowatt-hour has also been greatly reduced, until at present time agriculture is receiving service at rates undreamed of a few years ago. Research program on electric application has developed over 150 uses for electricity that have practical application on the farm.

Building low-cost lines in Arkansas. By C.A. Winder. Rural Electrification News. v. 2, no. 10. p. 5-6.

Electrification in rural Montana. v. 24, no. 15. April 1, 1937. p. 3, 31. Seven cooperative associations plan 700 miles of line to serve 2,300 customers.

Planned selling. By Grover C. Neff. Electrical World. v. 107, no. 21. May 22, 1937. p. 114-116, 198, 200. Necessity for growth of load dictates need for survey of territory, carefully considered rural extension policy, well-developed rural service organization, co-operation with assisting agencies.

## Electricity on the Farm.

Farm power cuts costs. Electrical World. v. 107, no. 17. April 24, 1937. p. 100.

## Engineering.

Engineering progress and economic progress. By Harold G. Moulton. General Electric Review. v. 40, no. 5. May, 1937. p. 220-227. Engineering is concerned with application of scientific knowledge to processes of wealth production. Economics is concerned with basic resources and factors upon which wealth production depends, and with forces and institutions which influence or control operation of what we call the economic system. It is readily apparent, therefore, that advance of engineering has a vital bearing upon economic progress. In turn, though perhaps less obviously, operation of economic system largely determines rate at which new engineering discoveries may be applied in actual production of wealth. This truth is brought sharply to our attention in periods of acute business depression, when introduction of improvements of demonstrated value are indefinitely deferred, and process of discovery and invention itself is slowed down; but even in times of prosperity installation of new methods and devices is not infrequently retarded because of general economic considerations. There must be constantly increasing efficiency in production on part of both labor and capital. Only by everlastingly improving technical processes and lowering

Engineering. (Cont'd)

costs of production can we obtain progressively higher standards of living. As efficiency is increased, benefits must be broadly disseminated among masses by means of high wages, low prices, or a combination thereof.

Erosion Control.

Erosion - the plant food robber. By Cornelius G. Ullman. Pacific Rural Press. v. 133, no. 10. March 6, 1937. p. 337.

Flood and erosion control problems, and their solution: Discussion. By Harry F. Blaney, W.P. Rowe and J.B. Lippincott. Proceedings of American Society of Civil Engineers. v. 62, no. 2. February, 1936. p. 244-257.

Making raindrops behave. By Ivy M. Howard. Successful Farming. v. 35, no. 5. May, 1937. p. 10-11, 38. Tells how they conquered sheet and gully erosion.

Orchard conference. By C.L. Hamilton. Soil Conservation. v. 2, no. 12. June, 1937. p. 271-276, 286.

Traveling soils. By Mark H. Brown. Soil Conservation. v. 2, no. 11. May, 1937. p. 252-253, 267-268.

Watershed control in Italy. By Arthur C. Ringland. Soil Conservation. v. 2, no. 11. May, 1937. p. 251, 265-266.

Wind erosion and its control. By Raymond R. Drake. Agricultural Engineering. v. 18, no. 5. May, 1937. p. 197-198, 200.  
Danger of soil blowing is greatest during winter and spring months. Three general factors are responsible: (1) Weathering of soil during winter; (2) continuous high winds; and (3) lack of sufficient plant growth and undecayed organic debris to protect weathered surface soil. Disastrous wind erosion in future may be prevented throughout Great Plains when (1) proper land use is practiced; (2) proper and timely tillage is practiced for recommended crops in area; and (3) effective temporary control measures are used where conditions indicate soil blowing is likely to occur.

Evaporation.

Evaporation studies, I. Survey of evaporation and light values in greenhouses. By J.D. Wilson. Bimonthly Bulletin, Ohio. Agricultural Experiment Station. v. 22, no. 186. May-June, 1937. p. 87-97.

Farm Buildings and Equipment.

How much steel on a 150-acre farm? Farm Implement News. v. 58, no. 10. May 20, 1937. p. 33. Large additional demand for steel from rural areas would develop if ideal farm equipment described could

Farm Buildings and Equipment. (Cont'd)

become standard for farms of this type, and if equipment recommended as ideal for other sizes and types of farms could be generally adopted.

Midwest farm building plan service. 2d ed. St. Joseph, Mich.,  
American society of agricultural engineers. c. 1937. 92 p.

Farm Machinery and Equipment.

Developments tending towards an improved utilization of the horse; recent studies in the construction of farm carts and their improvement. By E. Moskovits. Monthly bulletin of Agricultural Science and Practice. v. 28, no. 4. April, 1937. p. 121-132.

Domestic implement sales in four memorable years. Farm Implement News. v. 58, no. 10. May 20, 1937. p. 27. Table gives unit sales in the United States in 1920, 1929, 1935 and 1936.

Drill for spacing beet. International Sugar Journal. v. 39, no. 458. February, 1937. p. 56, 57.

Efficient machines reduce cost of harvesting. By Research department, farm equipment institute. Farm Implement News. v. 58, no. 11. June 3, 1937. p. 24.

Farm machinery in Europe. Pacific Rural Press. v. 133, no. 11. March 13, 1937. p. 373.

Grain drills through thirty-nine centuries. By Russell H. Anderson. Reprinted from Agricultural History. v. 10, p. 157-205. October, 1936.

Horse-drawn tools advance too! By Ralph W. Poulton. Breeder's Gazette. v. 102, no. 4. April, 1937. p. 7.

Little giants. By Arnold Nicholson. Country Gentleman. v. 107, no. 3. March, 1937. p. 14, 86-87.

Modern equipment for the 1937 hay crop. Farm Machinery and Equipment. no. 1841. May 15, 1937. p. 20.

New beet harvester developed by W.B. Linn. Implement Record. v. 34, no. 5. May, 1937. p. 72.

New blocking machine arouses interest. Through the Leaves. v. 25, no. 3. May, 1937. p. 91-93.

New principle in threshing lima bean seed. By Roy Bainer and J.S. Winters. Agricultural Engineering. v. 18, no. 5. May, 1937. p. 205-206. Preliminary development of new principle of threshing, study was made of commercial threshers in field to determine

Farm Machinery and Equipment. (Cont'd)

extent of damage. Samples taken from machine were used for moisture determinations and germination trials, while hand-threshed samples from same field served as checks. All machine data, including speeds of different parts and clearances, were obtained. This study indicated that thresher caused most of damage. As result of preliminary investigation, complete machine embodying this principle was designed and constructed. (Illustrated) Since practically all beans could be threshed by passing straw between rolls three times, a machine having three sets of rolls was expected to prove adequate.

1936 farm equipment census. Farm Machinery and Equipment. no. 1841. May 15, 1937. p. 6. Manufacture and sale of farm equipment and related products compared with years 1931 and 1935. Table gives value of farm equipment and related products manufactured and sold, by classes: 1936, 1935, and 1931.

"Paper overcoats" put on plants by machine. Popular Mechanics. v. 67, no. 3. March, 1937. p. 339. Paper is laid in long strips wide enough to cover ordinary garden produce. Acre of plants can be protected in thirty minutes, as high-wheeled machine passes down the rows.

Preparing the seed bed. By W.H. McPheters. Farm and Ranch. v. 56, no. 6. March 15, 1937. p. 4, 9. Improper adjustments of the plow result in poor work and hard work.

Fences.

Fence. Implement and Tractor. v. 52, no. 10. May 29, 1937. p. 12-13.

Nation-wide tests of wire and wire products. Farm Machinery and Equipment. no. 1841. May 15, 1937. p. 19. In countrywide series of atmospheric corrosion tests of wire and wire products, being carried out by American Society for Testing Materials, there are almost eleven thousand (10,886 to be exact) test specimens involved. Specimens of plain unfabricated wire, barbed wire, wire strand, farm fence, and chain-link fence have been assembled at eleven test sites. There are involved in tests about six miles of plain wire, over a mile of barbed wire, about one-half mile of strand, about two miles of farm fence and one-third mile of chain-link fence. This vast research program has two major objectives: (1) to obtain essential engineering information concerning materials involved, and (2) to assist in establishing national standard specifications for fencing, barbed wire and other products which will afford consumers an adequate guide in purchasing materials.

Filters.

Filtering materials for sewage treatment plants. By the Committee of the sanitary engineering division on filtering materials for water and sewage works. New York, American Society of Civil Engineers, 1937. 40p.

## Fires.

Farm fire losses third of million each year. By E.R. Gross, Wyoming; Stockman-Farmer. v. 43, no. 5. May, 1937. p. 3. Farm fires continue to cost nation nearly third of million dollars for every working day in year, not to mention 3,500 lives annually. Annual loss would build 50,000 average barns. Replacement of buildings destroyed requires cutting of 5,000 acres of our forests every year. Three important steps farmer may take: 1. Manage his property with consistent effort to reduce fire hazard. 2. Provide and regularly inspect these simple items of fire-fighting equipment which can be secured at moderate cost. 3. Buildings should be designed and constructed to be as fire-resistant as is consistent with cost and use.

## Floods and Flood Control.

Desert floods in the Sonoyta Valley. By Ronald L. Ives. American Journal of Science. v. 32, no. 191. November, 1936. p. 349-360. Observed desert floods in Sonoyta Valley, Mexico, fall into three major types: - sheetfloods, stream floods and playa floods. Any or all of these may result from a single downpour, type of flood being determined by type of precipitation, topography on which it falls, and amount of precipitation on given area in given time. Definite storm paths were observed, and local convection currents, confined to valley, or part of it, were noted as important factors in secondary storms.

Economic justification for flood protection. By Gilbert F. White. Civil Engineering. v. 7, no. 5. May, 1937. p. 345-348. In order to permit wise selection of flood-protection projects to be included in this program, there is urgent need for refinement of present technique for estimating economic justification for each.

\$800,000,000 flood control plan. Engineering News-Record. v. 118, no. 23. June 10, 1937. p. 852. Protection of Ohio and Mississippi Valleys requires many reservoirs, walls, channel improvements and floodways.

Engineering problems in flood control. By S.H. McCrory. Scientific monthly. v. 44, no. 4. April, 1937. p. 388-389.

Flood control at Chattanooga. By E. Lawrence Chandler. Civil Engineering. v. 7, no. 6. June, 1937. p. 405-408. Local protection works, in conjunction with TVA improvements, promise security.

Flood of 1937 in the Ohio Valley. By S.J. Horn. Civil Engineering. v. 7, no. 5. May, 1937. p. 326-330. Cause, magnitude, and possibility of recurrence; general plan for future protection works.

Floods and Flood Control. (Cont'd)

Flood protection data: Progress report of the Committee. Proceedings of American Society of Civil Engineers. v. 62, no. 2. February, 1936. p. 203-206.

High water in the lower Mississippi. By Raymond G. Moses. Military Engineer. v. 29, no. 165. May-June, 1937. p. 163-168.

Mississippi meets the 1937 flood. By George R. Clemens. Civil Engineering. v. 7, no. 6. June, 1937. p. 379-383. Jadwin plan levees and recent cutoffs function perfectly under severe test.

Ohio stream flow. By C.H. Eiffert. Ohio Engineering Experiment Station News. v. 9, no. 2. April, 1937. p. 16-18. Flood of January 13-24, 1937, in the Miami river basin.

Partial flood-control storage valuable in extreme high water. By C.I. Grimm. Engineering News-Record. v. 118, no. 21. May 2, 1937. p. 779. While proposed reservoirs will not hold larger floods within bank of rather limited channel, they will greatly reduce damaging effect. In fact, flood storage available would be sufficient to eliminate 98 per cent of monetary losses that otherwise would result, under present conditions of development, from floods of record. These benefits flood storage would obtain without use of levees.

Watershed treatment and flood control. By R.H. Davis. Soil Conservation. v. 2, no. 11. May, 1937. p. 247-250. Flood control programs which include watershed protection will: 1. Conserve soil and water on the land for useful purposes. 2. Decrease frequency of minor floods. 3. Diminish crests of major floods. 4. Reduce sedimentation in reservoirs. 5. Minimize silting of stream channels. 6. More nearly fulfill goal of doing greatest good for greatest number.

Flow of Water.

Adaptation of Venturi flumes to flow measurements in conduits: Discussion. By F.V.A.E. Engel and J.C. Stevens. Proceedings of American Society of Civil Engineers. v. 62, no. 2. February, 1936. p. 238-243.

Back-water and drop-down curves for uniform channels: Discussion. By P. Charles Stein. Proceedings of American Society of Civil Engineers. v. 63, no. 5. May, 1937. p. 915-917.

Flow characteristics in elbow draft tubes. By C.A. Mockmore. Iowa City, Ia., 1937. 251-286 p. University of Iowa. Studies in engineering. Reprint no. 1.

Frictional resistance in artificially roughened pipes: Discussion. By Victor L. Streater. Proceedings of American Society of Civil Engineers. v. 62, no. 2. February, 1936. p. 232-233.

### Flow of Water. (Cont'd)

Stable channels in erodible material: Discussion. By R.C. Johnson. Proceedings of American Society of Civil Engineers. v. 62, no. 2. February, 1936. p. 270-271.

Varied flow in open channels of adverse slope. By Arthur E. Matzke. Proceedings of American Society of Civil Engineers. v. 62, no. 2. February, 1936. p. 193-202. Gives brief survey of underlying theory and some numerical examples making clear the methods of practical applications.

### Frost Protection.

Survey of wind machines under freeze conditions. Various questions on orchard protection to be studied from all sides. By Donald J. Thompson. California Citrograph. v. 22, no. 5. March, 1937. p. 208-211.

### Fuels.

Efficiencies and costs of various fuels in domestic heating. Heating & Ventilating. v. 34, no. 3. March, 1937. p. 63-64.

### Grain-Storage.

Quality of wheat as affected by farm storage. By C.O. Swanson and F.C. Fenton. Grain & Feed Journals. v. 77, no. 9. November 11, 1936. p. 386-387.

### Hay Handling.

Chopping hay and other roughage. By George F. Jordan. Missouri Ruralist. v. 78, no. 7. April 3, 1937. p. 3, 22. Improves the feed, reduces costs, adds to livestock gains, saves time and labor, doubles storage capacity.

New ways with hay. By Keith Gordon. Farm Journal. v. 61, no. 6. June, 1937. p. 460-48. Chopping, baling from windrow. Mechanical drying.

### Heating.

Characteristics of heat storage in domestic electric heating. By H.J. Dana and R.E. Lyle. Pullman, Wash., 1936. 47 p. Washington. Engineering experiment station. Engineering bulletin no. 49.

Five types of domestic oil burners. By Arthur H. Sennor. Heating & Ventilating. v. 34, no. 3. March, 1937. p. 37-39.

## Heating.

How to design a mechanical warm-air system. Heating & Ventilating. v. 34, no. 4. April, 1937. p. 44-51. Standard code for gravity warm-air heating systems, first issued fifteen years ago, reduced the calculations involved in designing such plants to a simple routine. National Warm Air Heating and Air Conditioning Association, which introduced the Standard Code, now presents its Technical Code for the design and installation of Mechanical Warm Air Heating Systems. This outstanding code simplifies design of forced systems as did Standard code that of gravity plants.

Performance of oil-fired warm-air furnace. By A.P. Kratz and S. Kenzo. Heating & Ventilating. v. 34, no. 5. May, 1937. p. 62-68. Studies at University of Illinois Research Residence during recent heating seasons have yielded valuable data regarding performance of conversion burners and specially designed oil-burning furnaces. Included in these data are comparisons of two types of systems, together with results of tests on effects of varying rate of oil supply, excess air, flue gas temperature and other variables. Material in article is condensed from or based on a paper presented at 43rd annual meeting of American Society of Heating and Ventilating Engineers in St. Louis, in January, 1937.

What several hundred oil burner tests show. By Arthur H. Senner. Heating and Ventilating. v. 34, no. 4. April, 1937. p. 53-57. Summarizes results of tests with particular reference to performance of different kinds of burners in various boilers, including round, sectional, special oil burning boilers, and boiler-burner units.

## Hotbeds.

Flue and electric heated hotbeds. By J.R. Cooper. Southern Agriculturist. v. 67, no. 2. February, 1937. p. 24.

Methods of heating hotbeds. By G.J. Stout and others. State College, Pa., 1936. 22p. Pennsylvania. Agricultural experiment station. Bulletin no. 338.

## Houses.

Cost analysis of wood frame and stucco house. By C. Paul Ulmer. American Builder and Building Age. v. 59, no. 5. May, 1937. p. 65-70, 138, 140, 142, 144, 146. Purdue Housing Research Project. House number 1.

Houses of steel. By William H. Lenz. Ohio Engineering Experiment Station News. v. 9, no. 2. April, 1937. p. 19-20.

Modern house Southern farm. By J.F. Carter. Southern Agriculturist. v. 67, no. 2. February, 1937. p. 7.

## Hydraulics.

Construction and testing of hydraulic models, Muskingum watershed project: Discussion. By G. W. Howard, F.W. Edwards, and T. T. Knappen. Proceedings of American Society of Civil Engineers. v. 63, no. 5. May, 1937. p. 984-991.

Hydraulic jump in terms of dynamic similarity: Discussion. By Boris A. Bakhmeteff and Arthur E. Matzke. Proceedings of American Society of Civil Engineers. v. 62, no. 2. February, 1936. p. 226-233.

International meeting of hydraulic structures. Engineering News-Record. v. 118, no. 22. June 3, 1937. p. 810. International Association for Hydraulic Structures Research, which was founded at Brussels, in September, 1935, plans to hold its first international meeting at Berlin August 30-September 1. The two principal topics of discussion will be use of distorted hydraulic models and bottom load and silt. Association plans to start issuing semi-annually a bulletin, "Current Work in Hydraulic Structures Research", to be published in English, French and German. Hydraulic research in United States and in U.S.S.R. which is now reported in "Current Hydraulic Laboratory Research in the United States," and corresponding bulletin issued in Soviet Union will not be reported.

## Insect Control.

Controlling insects with electric traps. By Donald L. Collins. Electricity on the Farm. v. 10, no. 6. June, 1937. p. 15-16, 30. Even with present insufficiency of fundamental information, results obtained both with codling moth and with several other pests have been impressive, and benefits have occurred which a few years ago were considered impossible.

## Insulation.

Heat insulation tests and their application. By E.A. Allcut and F.G. Ewens. Heating, Piping & Air Conditioning. v. 9, no. 5. May, 1937. p. 328-334.

Protecting poultry house insulating board. By Harry E. Besley. New Jersey Agriculture. v. 19, no. 3. May-June, 1937. p. 2, 4.

## Irrigation.

Company plans compromise with Irrigation District. Engineering News-Record. v. 118, no. 2. June 3, 1937. p. 841. Terms of proposal include: (1) construction of 33,760 kw. of generating capacity on All-American Canal by the district; (2) District to reserve energy required for desilting, pumping and drainage, and corporation to deliver this energy at reasonable transportation charge; (3) corporation to purchase all energy capable of being

Irrigation. (Cont'd)

- distributed to its present future customers in Imperial and Coachella valleys, and in Mexico for 40 years at rate of 5 mills per kw.-hr., and any additional energy produced by district at 1.5 mills per kw.-hr.; (4) corporation to purchase district's present distribution facilities and Brawley diesel plant; (5) corporation to expend \$700,000 in twelve months for further rural electrification.
- Concrete pipe for irrigation. By Portland Cement Association.  
New Agriculture. v. 19, no. 9. June, 1937. p. 9.
- Gardens thrive on summer drinks. By George F. Jordan. Missouri Ruralist. v. 78, no. 8. April 17, 1937. p. 3, 17. Small ponds may be used for irrigating small plots at little expense.
- Importance of measuring irrigation water stressed. By R.L. Parshall. California Citrograph. v. 22, no. 5. March, 1937. p. 218.
- Irrigating up gives excellent stands. Through the Leaves. v. 25, no. 3. May, 1937. p. 105-106.
- Irrigation experiments with the early grano onion. By A.S. Curry. State College, N.M., 1937. 39 p. New Mexico. Agricultural experiment station. Bulletin no. 245.
- Irrigation of sugar beets. By J.E. Coke and L.D. Doneen. Pacific Rural Press. v. 133, no. 11. March 13, 1937. p. 370-371.
- Irrigation prospects good in the West. Engineering News-Record. v. 118, no. 20. May 20, 1937. p. 739. Good supplies of irrigation water for most parts of Western States are reported by Bureau of Agricultural Engineering in its April snow survey statement. Conditions are unfavorable in a few states.
- Irrigation proves valuable. Farm Machinery and Equipment. no. 1841. May 15, 1937. p. 19.
- Mutual irrigation companies in California and Utah. By Wells A. Hutchins. Washington, D.C., 1936. 235 p. Farm credit administration. Cooperative division. Bulletin no. 8.
- Portable pipes serve many uses. Pacific Rural Press. v. 133, no. 13. March 27, 1937. p. 447.
- Pump irrigation. By Ivan D. Wood. Lincoln, Neb., 1937. 12p. mimeographed. Nebraska. College of agriculture. Extension service. Circular 754.

Irrigation. (Cont'd)

- Rotary spray irrigation. By O.E. Robey. Michigan. Agricultural Experiment Station Quarterly Bulletin. v. 19, no. 4. May, 1937. p. 212-217. This method of applying water may be used on ground which is comparatively irregular, and because of its being applied slowly water does not erode soil. It can be operated with little labor and attention. On other hand, it requires more power to operate, and larger investment to install than some other systems.
- Suggestions for tomato irrigation. By L.D. Doneen. Pacific Rural Press. v. 133, no. 11. March 13, 1937. p. 362-363.
- Supplemental irrigation in Oregon. By W.R. Newmyer. Electrical Ruralist. v. 1, no. 2. June, 1937. p. 26. Story on pasture irrigation - the advantages of an electric pump for irrigation
- Twenty-first biennial report of the Department of roads and irrigation to Honorable R.L. Cochran, governor of the state of Nebraska. 1935-1936. By A.C. Tilley. Lincoln, Neb., 1936. 972p.
- Use of soil moisture and fruit-growth records for checking irrigation practices in citrus orchards. By C.A. Taylor. Washington, D.C., 1937. 23p. U.S. Department of Agriculture. Circular no. 426.
- Vest pocket irrigation. By John Merwin. Farm Journal. v. 61, no. 5. May, 1937. p. 39. Pumping water from stream, well, lake or pond enables individual farmers to get the upper hand in seasons of drought.
- Water - how to "spread it on." By Ivan D. Wood. Nebraska Farmer. v. 79, no. 11. May 22, 1937. p. 3, 21.
- Western irrigation prospects. New Agriculture. v. 19, no. 9. June, 1937. p. 12.
- Work of the United States Division of Irrigation. By W.W. McLaughlin and Wells A. Hutchins. Pacific Rural Press. v. 133, no. 11. March 13, 1937. p. 360.

Lubrication.

- Interesting facts about lubrication. By William G. Gregory. Earth Mover. v. 24, no. 5. May, 1937. p. 20-23. Explaining why better lubricating oils should promote greater power delivery and fuel economy.
- Recent developments in evaluating lubricating greases. By H.A. McConville. General Electric Review. v. 40, no. 5. May, 1937. p. 242-245. Accelerated tests of oxidation - description of apparatus and procedure - determination of consistency - effects of temperature - service requirements and outline of related investigations.

Lubrication. (Cont'd)

Why lubrication is essential. Farm Machinery and Equipment.  
no. 1840. April 15, 1937. p. 21.

Miscellaneous.

American standards yearbook. 1931. New York. American standards  
association, n.d. 102p.

Bibliography of reports by state and regional planning organizations.  
No. 1. Reports received in the Library of the National Resources  
Committee January - April, 1937. Supplementary to "State planning  
programs and accomplishments." National resources committee,  
Washington, D.C., 1936. 14p. mimeographed.

Machine-made jobs. Farm Machinery and Equipment. no. 1840.  
April 15, 1937. p. 7-8, 40. Some pertinent "Buts" and "Ands"  
in the discussion of technological changes.

Machines create more jobs than they destroy. Popular Mechanics.  
v. 67, no. 3. March, 1937. p. 338. Making of modern  
automobile now requires twenty-five per cent more employment per  
unit car than it did in 1929. Instead of robbing operators of work,  
dial telephone's introduction was accompanied by increase in number  
of operators from 190,000 in 1920 to 249,000 in 1930. Advances in  
transportation in airplanes, automobiles, trucks and busses have  
decreased 1,000,000 peak employment of railroads, but have increased  
over-all transportation employment by addition of 2,700,000 truck  
drivers, 153,000 bus operators and 301,000 highway maintenance  
workers.

National research project on reemployment opportunities and recent  
changes in industrial techniques. David Weinstraub, director.  
Washington, D.C., Works Progress Administration, 1937. 63p.

Some misconceptions in engineering economics. By C.R. Young.  
Canadian Engineer. v. 72, no. 13. March 30, 1937. p. 12-15.  
Abstracted from an address delivered before the Ontario section,  
American Society of Mechanical Engineers, Toronto.

Orchard Heaters.

Orchard heating or smudging, which? By George P. Weldon. Pacific  
Rural Press. v. 133, no. 11. March 13, 1937. p. 376.

Painting.

House paint in rolls applied like wallpaper. Popular Mechanics.  
v. 67, no. 3. March, 1937. p. 337. Prefabricated by experts  
the paint rolls are applied like wallpaper. Of particular importance  
is possibility of its application to wooden surfaces which have deter-

Orchard Heaters. (Cont'd)

ierated. Rolls cover cracks, blistered paint and splintered spots more satisfactorily than several coats of paint. In experimental form, this product is little more than oilcloth. In fact, good grade oilcloth might be used for this purpose, but is not so suitable for weathering as outside paint in similar form. Cloth base has four to six coats of paint. Wall is prepared by coating with a special rubber cement. Then two workmen open paint roll and hang it horizontally. With soft brush the paint-covered cloth is pressed into place, following contour of wall surface. Material is pliant enough to follow irregularities. Makers expect it to withstand elements from ten to fifteen years. Present plans call for paint rolls to be marketed at prices below those jobs where paint is brushed on. In addition, rolls can be applied more rapidly than two or three coats of paint.

Plumbing.

Report on hydraulics and pneumatics of plumbing drainage systems. Part I. By F.M. Dawson and A.A. Ralinske. Iowa City, Ia., 1937. 28p. University of Iowa. Studies in engineering. Bulletin no. 10.

Poultry Houses and Equipment.

Evolution of a sanitary type of chick feeder. By L. Van Es and J.F. Olney. Lincoln, Neb., 1937. 14 p. Nebraska. Agricultural experiment station. Bulletin 306.

Feed hoppers. By G.T. Klein. Amherst, Mass., 1937. 4 p. Massachusetts state college. Extension service. Leaflet 76.

Real burglar alarm for poultry houses. By W.H. Reasoner. California Cultivator. v. 84, no. 3. January 30, 1937. p.59.

Power.

Double use of water from Seminole reservoir. Wyoming Stockman-Farmer. v. 43, no. 4. April, 1937. p. 1, 7.

Power development on Federal reclamation projects. Reclamation Era. v. 27, no. 5. May, 1937. p. 102-106. Primary work of Bureau of Reclamation is and always will be development of irrigation water supplies and creation of new homes and communities in arid West. But our projects are growing increasingly complex. Storage dam of future, like Boulder Dam, will control entire rivers, and it must be made to serve all conservation purposes, prominent among which will be flood control, river regulation for irrigation and domestic uses, improvement of navigation and power generation. In planning new projects, we must deal not only with present needs, but also with economic problems of future. Present developments

Power. (Cont'd)

must not conflict with future needs. Undertakings of Bureau of Reclamation, therefore, must be based not only on adequate engineering plans and designs, but in addition on searching economic reports and investigations. Where it is possible to develop power in connection with irrigation improvements, power must be considered. With water as scarce as it is in the West, it is important that what water we have does double duty.

Power development on Federal Reclamation Projects. By George O. Sanford. Agricultural Engineering. v. 18, no. 5. May, 1937. p. 215-216. In planning new projects we must deal not only with present needs, but also with economic problems of future. Present developments must not conflict with future needs. Undertakings of the Bureau of Reclamation, therefore, must be based not only on adequate engineering plans and designs, but in addition on searching economic reports and investigations. Where it is possible to develop power in connection with irrigation improvements, power must be considered. With water as scarce as it is in the West, it is important that what water we have does double duty.

Pumps and Pumping.

Water wheel-centrifugal pump. By Clove Cutler. Montana Farmer. v. 24, no. 16. April 15, 1937. p. 3. Chief factors to consider are: amount of water to be pumped, total head of lift for pump, velocity of stream which will run wheel, depth of stream and whether stream flow remains constant through season, or if at end of flood water season it falls off.

Rainfall and Runoff.

Temperature and rainfall changes in the United States during the past 40 years. By Larry F. Page. Monthly Weather Review. v. 65, no. 2. February, 1937. p. 46-54.

Reclamation.

Reclamation of potato land flooded by salt water. By G.V.C. Houghland. American Potato Journal. v. 14, no. 1. January, 1937. p. 19-22. From two flood situations discussed, information compiled leads to conclusion that potatoes may be grown successfully on land flooded with salt water if salt content is below 1000 parts per million (0.10 per cent) at time of planting and normal rainfall occurs throughout season. Recommendations for reclamation have also demonstrated their value in helping to bring back normal conditions. It may be pointed out also that the electrical bridge has proved its usefulness in an emergency of this kind where rapid rather than highly accurate results are desired. It may be further pointed out that although a potato crop may be grown on land that has been salted below limits stated, yet it is possible that quality may be impaired, but no evidence of such effect has been reported.

### Refrigerants.

Technical aspects of "Freon" refrigerants. By R.J. Thompson.  
Refrigerating Engineering. v. 33, no. 4. April, 1937.  
p. 225-230.

### Refrigeration.

Cold cash. By R.U. Blasingame. Farm Journal. v. 61, no. 6.  
June, 1937. p. 16, 24. Quick cooling lowers bacteria count,  
clinches the market, raises dairy profits.

Protecting milk profits. By Albert V. Krewatch. Electricity  
on the Farm. v. 10, no. 6. June, 1937. p. 9-11.

Protection of apples and pears in transit from the Pacific northwest  
during the winter months. By E.D. Mallison, E.A. Gorman, jr.,  
and W.V. Hukill. Washington, D.C., 1937. 55p. U.S.  
Department of agriculture. Technical bulletin no. 550.

### Refrigerator lockers.

Community cold box brings big saving. By Warner Ogden. Electricity  
on the Farm. v. 10, no. 5. May, 1937. p. 15.

Rural storage lockers. By Roger Sprague. Refrigerating Engineer-  
ing. v. 33, no. 6. June, 1937. p. 382-383.

### Silos.

Fayette leads in trench silos. Farm and Ranch. v. 56, no. 6.  
March 15, 1937. p. 24. Gives list of Texas counties,  
number of farms in each, and number of trench silos.

### Silt.

Stable channels in erodible material: Discussion. By E.W. Lane.  
Proceedings of American Society of Civil Engineers. v. 63, no. 5.  
May, 1937. p. 901-910.

### Smut.

Seed treatment experiments with oats naturally and artificially  
inoculated with smuts. By R.W. Leukel. Washington, D.C.,  
1937. 16p. U.S. Department of agriculture. Technical  
bulletin no. 568.

### Snow Surveys.

Snow surveys prove valuable. By J.H. Currie. Pacific Rural Press.  
v. 133, no. 11. March 13, 1937. p. 365. New service which  
supplies information to farmers early in Spring regarding snow water

### Snow Surveys.

which will flow in various creeks and rivers during coming summer has recently been undertaken by U.S. Bureau of Agricultural Engineering. This forecast not only reports quantity of water which will flow during season, but also amount each month. These snow surveys have proven very accurate - within five per cent of actual minimum supply of water that will be available for irrigation. This information has been very valuable to farmers depending on snow water for irrigation, as getting it in early Spring helps them determine how lavishly to use the first water, or if they are planting annual crops, just how heavy they may plant, for in many cases they are limited solely by amount of irrigation water that will be available.

### Soil Conservation.

Planning for soil and water conservation. By E.J. Utz. Soil Conservation. v. 2, no. 11. May, 1937. p. 256-259.

Soil and water conservation investigations at the soil conservation experiment station, Missouri valley loess region, Clarinda, Iowa. By G.W. Musgrave and R.A. Norton. Washington, D.C., 1937. 182p. U.S. Department of agriculture. Technical bulletin no. 558.

### Soil Moisture.

Determination of soil moisture. By D.L. Gross and E.H. Dell. Lincoln, Neb., 1937. 4 p. mimeographed. Nebraska. College of agriculture. Extension service. Circular no. 107.

Measuring soil moisture. By D.O. Ehrenburg. Engineering News-Record. v. 118, no. 19. May 13, 1937. P. 708-710. Tests by Bureau of Reclamation bring out new facts on effects of compaction, temperature, grading and composition of soil.

Stored moisture assures potato crop for western dry land. By H. O. Werner. Lincoln, Neb., 1937. 4 p. mimeographed. Nebraska. College of agriculture. Extension service. Circular 1215.

### Soil Temperature.

Growth and water losses in citrus as affected by soil temperature. By A.R.C. Haas. California Citrograph. v. 21, no. 12. October, 1936. p. 467, 479.

### Soils.

Liming Massachusetts soils. By R.W. Donaldson. Amherst, Mass., 1937. 11 p. Massachusetts state college. Extension service. Leaflet 134.

### Soils.

Principles of soil stabilization. By W.S. Housel. Civil Engineering. v. 7, no. 5. May, 1937. p. 341-344. Soil stabilization may be defined as any process of treating soil mixture to improve its ability to resist deformation under load, and to insure durability of desirable state produced. Fundamental aspects of soil stabilization, particularly as applied to sub-grades, are discussed. Taking up in turn properties of soil mixtures, rational methods of proportioning and special stabilizing processes, reviews present technique both in field and laboratory, and points out that a number of important problems remain to be solved. Extensive investigations now under way may go far toward solution of these problems, but local conditions will always control.

### Sprays and Spraying Equipment.

Care of spray equipment. By A.H. Hollenberg. Farm Machinery and Equipment. no. 1841. May 15, 1937. p. 26.

Hose coupling for high-pressure spray lines. By E.M. Dieffenbach. Agricultural Engineering. v. 18, no. 5. May, 1937. p. 214.

Water vapor for agricultural spraying. By R.M. Merrill. Agricultural Engineering. v. 18, no. 5. May, 1937. p. 216. During past two seasons the Bureau of Agricultural Engineering of U.S. Department of Agriculture has carried on preliminary field tests using water vapor as carrier for applying a number of insecticides and fungicides. It is not thought that seasons results are in any way conclusive, but they indicate possibility of using water vapor for applying almost any type of materials. From observations and from actual counts it seems that effective application of material was made on apple and cherry trees with about one-third to one-fourth of material ordinarily used with conventional sprayer. Effectiveness of sprays in general apparently was about the same as those applied with conventional sprayer.

### Storage.

Cellar and cold storage of sound and mechanically damaged Triumph seed potatoes. By H.O. Werner. Lincoln, Neb., 1936. 59p. Nebraska. Agricultural experiment station. Research bulletin 88.

Controle de la temperature dans les magasins et silos a grain. Genie rural. v. 30. April, 1937. p. 25. Control of temperature in storehouses and grain silos.

Improved type of farm potato storage. By Alfred D. Edgar. Orono, Maine. 1937. Maine. College of agriculture. Extension service. Bulletin no. 238.

Storage. (Cont'd)

Storage and transportational diseases of vegetables due to sub-oxidation. By Ray Nelson. East Lansing, Mich., 1926. 38 p. Michigan. Agricultural experiment station. Technical bulletin no. 81.

Stoves.

Improved wood-burning stove opening a new market for fuelwood. By Ralph C. Bryant. Connecticut woodlands. v. 1, no. 1. February, 1936. p. 3-6.

Study of selected types of domestic gas stoves. By Arnold E. Baragar. Lincoln, Neb., 1936. 74p. Nebraska. Agricultural experiment station. Research bulletin 86.

Tires.

Sales of rubber tires for farm machines in 1936. Farm Implement News. v. 58, no. 11. June 3, 1937. p. 44. During 1936 rubber companies sold 375,000 tires for use on farm tractors and other farm equipment. This compares with 20,000 sold in 1933, the second year following the introduction of rubber tires into implement field.

Tests on use of rubber tires and steel wheels on a farm tractor. By H.E. Murdock. Bozeman, Montana, 1937. 35 p. Montana. Agricultural experiment station. Bulletin no. 339.

Tractors.

Displacement of horses and mules by tractors. By Martin R. Cooper. Agricultural Situation. v. 21, no. 6. June 1, 1937. p. 22-24. During last 18 years combined number of horses and mules of all ages on farms has decreased at average rate of about 2.2 per cent per year. On January 1, 1937, there were 16,130,000 horses and mules on farms compared with 26,436,000 head on January 1, 1919, when numbers were at a peak. This decrease of nearly 40 per cent has been concurrent with an expanding use of tractors, motor trucks and automobiles, which, together with further developments of tillage and harvesting machinery, has made possible handling of acreage of crops somewhat larger than acreage of 10 or 15 years ago.

Farm requirements of small, all-purpose tractor. By B.R. Benjamin. Agricultural Engineering. v. 18, no. 5. May, 1937. p. 209-210. Small, general-purpose tractor should meet all requirements for plowing, planting, cultivating and harvesting on Corn Belt farms of a size suited to its plowing capacity, replacing three to six horses. Small, general-purpose tractor should be principal power on farms from ten acres to one-hundred acres.

## Tractors. (Cont'd)

Requirements of small all-purpose tractor from implement engineer's viewpoint. By D.C. Heitshu. Agricultural Engineering. v. 18, no. 5. May, 1937. p. 213-214. In general, requirements of small type all-purpose tractor are identical with those of better known two to three-plow size. Other than these general requirements there are three which are different and very important. These are (1) power, (2) general dimensions, and (3) cost.

Requirements of small all-purpose tractor from implement engineer's viewpoint. By J.R. Grellind. Agricultural Engineering. v. 18, no. 5. May, 1937. p. 211-212. In this discussion no attempt is made to completely cover requirements for small tractor. In order to be economically successful on smaller farms, small tractor should be in fullest and widest sense of word an all-purpose tractor, so as to replace horses completely.

Tractors back to 1929 record. Farm Machinery and Equipment. no. 1840. April 15, 1937. p. 9. 1936 production nears all-time high record. "All purpose" models account for 70% of production.

## Ventilation.

Design and operation of exhaust ventilation system. Heating & Ventilating. v. 34, no. 5. May, 1937. p. 47-55. For some time a committee of American Standards Association has been at work on whole general question of industrial exhaust ventilation. Subject is so broad that it has been necessary to consider it in parts. Present code, entitled "Fundamentals relating to design and operation of exhaust system," is published by the Association with hope that it will be studied and its principles applied in critical analysis of existing exhaust systems which must be made in order that committee may have a body of technical experience to form basis of its future reports.

## Water, Underground

Administrative control of underground water: physical and legal aspects: Discussion. By Harold Conkling. Proceedings of American Society of Civil Engineers. v. 63, no. 5. May, 1937. p. 911-914.

## Waterproofing.

Sugar for waterproofing. Sugar Bulletin. v. 15, no. 15. May 1, 1937. p. 7. British Sugar Beet Review says: Cloth waterproofed with sugar is newest product of textile chemists. Lactic acid - which is responsible for sourness of vinegar - appears to be made to combine chemically with cane sugar. Resulting substance, called sucrose lacto-acetate, can be dissolved and applied to cloth. When cloth is ironed, its surface becomes glossy and waterproof. Sucrose lacto-acetate has other uses, such as making insulating paper and various plaster substances.